

REMARKS

Claims 1-7, 18-22, 24-27, 31, and 36 are pending. By the foregoing amendment, new claims 37-48 have been added; claim 1 has been amended by incorporating the limitations of claim 2, claims 18 has been amended by incorporating the limitations of claim 19, and claim 2 has been amended by incorporating the limitations of claim 21; and claims 2, 19 and 21 have been canceled. Support for the added claims can be found at original claim 20 and page 20, lines 2-9 (claims 37, 39, 40, 47, 48); original claim 6 and page 19, line 1 (claim 38); page 20, lines 14-16 (42); page 19, lines 16-21 (41, 43, 45); page 19, line 30 – page 20, line 2 (43, 46); and elsewhere in the specification. These claims do not present new matter and entry of the amendment is respectfully requested.

Peripheral Matters

The title has been amended as suggested and an Information Disclosure Statement accompanies this amendment.

Prior Art Rejections

In paragraph 15 of the Office Action, the Examiner indicates that claims 2, 19 and 21 would be allowable if placed in independent form. By this Amendment, the limitations of these claims have been incorporated into claims 1, 18 and 20 respectively. Accordingly, applicants request withdrawal of the rejections of these claims.

Claim 6 has been rejected under section 103 as being obvious in view of Dolan '998. This rejection is respectfully traversed. Claim 6 contains a volumetric productivity (and rapid desorption) limitation, namely, that "wherein the apparatus possesses capability such that, if the adsorption media is replaced with an equal volume of 13x zeolite, with a bulk density of 0.67 grams per cubic centimeter, and then saturated with carbon dioxide at 760 mm Hg and 5 °C and then heated to no more than 90 °C, at 760 mm Hg, then at least 0.015 g CO₂ per mL of apparatus is desorbed within 1 minute of the onset of heating."

In the present specification (see, for example, the Example 4), applicant describes apparatus possessing this volumetric productivity characteristic. In the examples described in Example 4, the apparatus has a relatively large adsorption mesochannel that is packed with adsorption media. Thus, preferred embodiments of applicant's apparatus contain relatively large amounts of adsorption media per device volume. In contrast, Dolan uses a very thin layer of adsorbent (see discussion below) in a relatively large volume of apparatus. Thus, Dolan could not achieve the claimed level of volumetric productivity. Nor is there any motivation in the prior art to modify Dolan's design to obtain the claimed level of volumetric productivity. Furthermore, even if there were such a motivation, there is no reason to believe that it is even possible to modify Dolan's apparatus to obtain the claimed level of productivity.

Accordingly, applicants respectfully request withdrawal of the rejection of claim 6 in view of Dolan.

Additionally, new independent claim 37 has been added. Claim 37 is the same as original claim 20, except that a limitation has been added reciting that the "adsorption media fills at least 60% of the cross section of at least one portion of the adsorption channel." An adsorption channel is discussed in applicants' specification at page 12, lines 15-27; page 18, line 25 - page 19, line 3; and page 19, line 24 - page 20, line 16. From these descriptions (which are typical of terminology in the art), the volume of an adsorption channel includes the volume occupied by sorbent and the adjacent open volume for bulk flow of a fluid in contact with the sorbent.

Not surprisingly, Dolan uses the same or similar definitions. At col. 10, lines 4-7, Dolan states: "The adsorbent layer comprises an adsorbent paper layer and an adsorption layer. The adsorption spacer is a screen-like fabric which provides for passage over the adsorbent paper layer." Similarly, at col. 12, lines 56-57 Dolan describes: "An adsorbent layer comprising at least one layer of an adsorbent paper layer (5) and at least one feed spacer (6) . . ."

In view of these descriptions, it is clear that the claimed "cross section . . . of the adsorption channel" includes both the adsorbent (the paper in Dolan's device) and the adjacent space (the passage created by the adsorption spacer in Dolan's device). Dolan does not teach or suggest an adsorption channel in which "adsorption media fills at least 60% of the cross section of at least one portion of the adsorption channel." To the contrary, Dolan teaches a much lower volume % of adsorbent. For example, in Example II of Dolan, the feed spacer had a thickness of 3.8 mm, while (as pointed out in the First Office Action) the adsorption paper had a thickness of only 0.1 to 0.5 mm. Thus, Dolan suggests a much lower cross sectional % of adsorbent media (2.6% to 11.6% in Example II).

It may be noted that a similar issue was found to distinguish the Dolan reference in the parent application.

Conclusion

If the Examiner has any questions or would like to speak to Applicants' representative, the Examiner is encouraged to call Applicants' attorney at the number provided below.

Respectfully submitted,

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